

Calculating concordant and discordant scores

By P. Stikker

Companion website: <https://PeterStatistics.com>

To illustrate how to determine the concordant and discordant scores, the following example will be used.

		link theory to practice				
		fully disagree	disagree	neutral	agree	fully agree
motivation	fully disagree	1	4	9	1	3
	disagree	0	1	2	2	1
	neutral	2	0	4	1	1
	agree	1	1	1	1	3
	fully agree	1	0	3	0	2

For each cell $O_{i,j}$ the Concordant and Discordant will be determined.

The concordant score $C_{i,j}$ is the sum of all scores to the upper-left and lower-right of the cell. These will be highlighted in yellow.

The discordant score $D_{i,j}$ is the sum of all scores to the lower-left and the upper-right of the cell. These will be highlighted in green.

The current cell is highlighted in blue.

O_{1,1}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{1,1} = 1+2+2+1+0+4+1+1+1+1+1+3+0+3+0+2 = 23$$

O_{1,2}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{1,2} = 2+2+1+4+1+1+1+1+1+3+3+0+2 = 21$$

$$D_{1,2} = 0+2+1+1 = 4$$

O_{1,3}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{1,3} = 2+1+1+1+1+3+0+2 = 11$$

$$D_{1,3} = 0+1+2+0+1+1+1+0 = 6$$

O_{1,4}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{1,4} = 1+1+3+2 = 7$$

$$D_{1,4} = 0+1+2+2+0+4+1+1+1+1+0+3 = 16$$

O_{1,5}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$D_{1,5} = 0+1+2+2+2+0+4+1+1+1+1+1+1+1+0+3+0 = 20$$

O_{2,1}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{2,1} = 0+4+1+1+1+1+1+1+3+0+3+0+2 = 17$$

$$D_{2,1} = 4+9+1+3 = 17$$

O_{2,2}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{2,2} = 1 + 4+1+1+1+1+1+3+3+0+2 = 17$$

$$D_{2,2} = 9+1+3 + 2+1+1 = 17$$

O_{2,3}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{2,3} = 1+4 + 1+1+1+3+0+2 = 13$$

$$D_{2,3} = 1+3 + 2+0+1+1+1+0 = 9$$

O_{2,4}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{2,4} = 1+4+9 + 1+3+2 = 20$$

$$D_{2,4} = 3 + 2+0+4+1+1+1+1+0+3 = 16$$

O_{2,5}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{2,5} = 1+4+9+1 = 15$$

$$D_{2,5} = 2+0+4+1+1+1+1+1+0+3+0 = 15$$

O_{3,1}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{3,1} = 1+1+1+3+0+3+0+2 = 11$$

$$D_{3,1} = 4+9+1+3+1+2+2+1 = 23$$

O_{3,2}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{3,2} = 1+0 + 1+1+3+3+0+2 = 11$$

$$D_{3,2} = 9+1+3+2+2+1 + 1+1 = 20$$

O_{3,3}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{3,3} = 1+4+0+1 + 1+3+0+2 = 12$$

$$D_{3,3} = 1+3+2+1 + 1+1+1+0 = 10$$

O_{3,4}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{3,4} = 1+4+9+0+1+2 + 3+2 = 22$$

$$D_{3,4} = 3+1 + 1+1+1+1+0+3 = 11$$

O_{3,5}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{3,5} = 1+4+9+1+0+1+2+2 = 20$$

$$D_{3,5} = 1+1+1+1+1+0+3+0 = 8$$

O_{4,1}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{4,1} = 0+3+0+2 = 5$$

$$D_{4,1} = 4+9+1+3+1+2+2+1+0+4+1+1 = 29$$

O_{4,2}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{4,2} = 1+0+2 + 3+0+2 = 8$$

$$D_{4,2} = 9+1+3+2+2+1+4+1+1 + 1 = 25$$

O_{4,3}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{4,3} = 1+4+0+1+2+0 + 0+2 = 10$$

$$D_{4,3} = 1+3+2+1+1+1 + 1+0 = 10$$

O_{4,4}

	fd	d	N	A	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{4,4} = 1+4+9+0+1+2+2+0+4 + 2 = 25$$

$$D_{4,4} = 3+1+1 + 1+0+3 = 9$$

O_{4,5}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{4,5} = 1+4+9+1+0+1+2+2+2+0+4+1 = 27$$

$$D_{4,5} = 1+0+3+0 = 4$$

O_{5,1}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$D_{5,1} = 4+9+1+3+1+2+2+1+0+4+1+1+1+1+3 = 35$$

O_{5,2}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{5,2} = 1+0+2+1 = 4$$

$$D_{5,2} = 9+1+3+2+2+1+4+1+1+1+3 = 29$$

O_{5,3}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{5,3} = 1+4+0+1+2+0+1+1 = 10$$

$$D_{5,3} = 1+3+2+1+1+1+1+3 = 13$$

O_{5,4}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{5,4} = 1+4+9+0+1+2+2+0+4+1+1+1 = 26$$

$$D_{5,4} = 3+1+1+3 = 8$$

O_{5,5}

	fd	d	N	a	fa
fully disagree	1	4	9	1	3
disagree	0	1	2	2	1
neutral	2	0	4	1	1
agree	1	1	1	1	3
fully agree	1	0	3	0	2

$$C_{5,5} = 1+4+9+1+0+1+2+2+2+0+4+1+1+1+1+1 = 31$$

Combining all scores gives the concordant results:

C _{i,j}	fd	d	N	a	fa
fully disagree	23	21	11	7	
disagree	17	17	13	20	15
neutral	11	11	12	22	20
agree	5	8	10	25	27
fully agree		4	10	26	31

And discordant results:

D _{i,j}	fd	d	N	a	fa
fully disagree		4	6	16	20
disagree	17	17	9	16	15
neutral	23	20	10	11	8
agree	29	25	10	9	4
fully agree	35	29	13	8	